

IN THE CLAIMS

This version and listing of the claims replaces and supercedes all prior versions and listings of the claims

1. (Original) A device for determining k representative of the magnitude A of an orthogonal component of a Quadrature Amplitude Modulation (QAM) symbol, including:

multi-stage binary search circuitry for conducting a multi-stage binary search for the value of A between predetermined maximum and minimum values A_{\max} and A_{\min} , each stage producing a single bit binary output; and

integer value construction circuitry for constructing the integer value k by juxtaposing the binary outputs from consecutive stages of the binary search,

where $W=(A_{\max}-A_{\min})/n$,

n equals 2^i and i is an integer,

A_{\max} is a maximum detectable level of the magnitude A,

A_{\min} is a minimum detectable level of the magnitude A, and

W is the incremental level between consecutive values of the integer value k.

2. (Original) A device according to claim 1, wherein each orthogonal component sample and the predetermined maximum value A_{\max} are in a floating point format comprising a mantissa and an exponent, and wherein the multi-stage binary circuitry includes exponent normalizing circuitry for bit-shifting the mantissa until the exponent is identical to the exponent of the predetermined maximum value A_{\max} .

3. (Original) A device according to either one of claims 1 or 2 wherein the predetermined minimum value A_{\min} is zero, and the multi-stage binary search circuitry includes a first stage search element and one or more subsequent stage search elements, the first stage search element including a bit shift block for determining the mid-point between the predetermined maximum value A_{\max} and zero.

4. (Original) A device according to claim 3, wherein each subsequent stage search elements includes an adder for determining the mid-point between upper and lower output values of a preceding search element.

5. (Currently Amended) A device according to claim 3~~either one of claims 3 or 4~~, wherein the first stage search element and subsequent stage search elements each include a comparator for comparing respectively the midpoint between predetermined maximum and minimum values A_{\max} and A_{\min} , and the midpoint between upper and lower output values of a preceding search element, and wherein the integer value k is constructed by the integer value constructing circuitry from the outputs of the comparators.

6-10. Cancelled

11. (New) A device according to claim 4, wherein the first stage search element and subsequent stage search elements each include a comparator for comparing respectively the midpoint between predetermined maximum and minimum values A_{\max} and A_{\min} , and the midpoint between upper and lower output values of a preceding search element, and wherein the integer value k is constructed by the integer value constructing circuitry from the outputs of the comparators.